

IN THE CLAIMS:

Please amend claims 1- 28 as follows:

1. (Currently Amended) A device for automated evolutionary assistance to the air traffic control for equipping an air traffic control system comprising:
- a computer (1)-including a software program permitting to receive the data concerning the flight plans (3)-of the aircraft(10, 10') and Radars (4)-and to elaborate and display (5)-them to the controllers (6)-of the control sectors (8);, the said controllers having a radiotelephony link (6)-for communicating with the said aircraft (10, 10'). The; said system moreover comprising means for permitting to the controllers to elaborate and display (12)-a list said the "Controller Agenda"controller agenda of the problems (13)-such as the said controllers can forecast them with the sole data and analysis means they have at their disposal;;
- characterized in that the wherein said device comprises includes;
- means (19)-for establishing and updating a list of conflicts, said "Computer Agenda"computer agenda of conflicts on the basis of all the information and computation means of the computer;;
- means (20)-for comparing, aircraft pair by aircraft pair, the Controller Agenda controller agenda and the Computer Agenda computer agenda, in that the said device makes appearing each forecast disparity between the said Agendas agendas;

- means for selecting those of the problems as forecast by the controller which only take their source to the lack of accuracy of the said forecast made by the controller;

- means for selecting among the aircraft pairs those of the conflicts which can be solved by a modification of the flight parameters; and

- means for exchanging messages between the computer and the controller.

2. (Currently Amended) A ~~The~~ device according to claim 1, ~~characterized in that wherein~~ said device ~~moreover comprising~~ further includes means for elaborating optimal solutions to the conflicts figuring in the ~~Computer Agenda~~ computer agenda.

3. (Currently Amended) A ~~The~~ device according to claims 1, ~~or 2~~ ~~characterized in that wherein~~ said device ~~moreover comprising~~ further includes:

- means for establishing a radio link with the aircraft on board computers;

- means for automatically collecting in the said on board computers complementary data for establishing the list of the ~~Computer Agenda~~ computer agenda; and

- means for elaborating instructions for the collision avoidance of the aircraft.

4. (Currently Amended) ~~A—The~~ device according to claim 3, ~~characterized in that wherein~~ said device moreover ~~comprising~~ further includes means for collision avoidance instructions being executed and their execution being monitored by the mean of the automatic data link with the on board computers of the aircraft.

5. (Currently Amended) ~~A—The~~ device according to claim 4, ~~characterized in that wherein~~ said device moreover ~~comprising~~ further includes the means for automatically modifying, or after the concerned aircraft pilot's agreement, via the data link ~~(16)~~ the flight parameters of the concerned aircraft.

6. (Currently Amended) ~~A—The~~ device according to claim 4 ~~or 5~~, ~~characterized in that wherein~~ said device moreover ~~comprising~~ further includes means for automatically modifying, or after the concerned aircraft pilot's agreement via the data link ~~(16)~~ when it is given order by the controller, the flight parameters of an aircraft when the said modifications make the said aircraft trajectory out of its flight plan tolerances.

7. (Currently Amended) ~~A device according to one of the foregoing~~ ~~claims, characterized in that~~ The device according to claim 1, wherein said device moreover ~~comprising~~ further includes means for determining among the conflicts of the Controller Agenda-list ~~(13)~~ controller agenda those which have no reason to be and notifying it on the display ~~(12)~~ of the sector in charge of the implied aircraft.

8. (Currently Amended) ~~A device according to one of the foregoing claims, characterized in that~~ The device according to claim 1, wherein said device moreover comprising further includes means for establishing the list of conflicts (19) computer agenda for all the traffic; including the conflicts even before the implied aircraft have entered in the control sector in which the conflict could happen.

9. (Currently Amended) ~~A~~ The device according to claim 8, ~~characterized in that wherein said device moreover comprising~~ further includes means for selecting in the list of conflicts (19) computer agenda the particularly sensitive conflicts, namely those which will conduct to conflict clusters being difficult to solve, and means for proposing the modification of the aircraft flight parameters on screen (14) of the assistant controller (7) presently in charge of the aircraft when the said conflict will only occur in a following sector.

10. (Currently Amended) ~~A device according to one of claims 8 and 9 characterized in that~~ The device according to claim 8, wherein said device moreover comprising further includes means for selecting in the conflict list (19) computer agenda the particularly sensitive conflicts, namely those which will give birth to difficult to solve clusters, and means for proposing, on the screen (14) of an assistant controller, transfer conditions of an aircraft of one of these sectors to the following.

11. (Currently Amended) ~~A device according to one of claims 8 to 10,~~  
~~characterized in that~~ The device according to claim 8, wherein said device moreover  
~~comprising further includes~~ means for displaying on the assistant controllers screen (14)  
proposals for anticipated conflict solving namely in the most sensitive cases either for  
conflicts which will occur in the following sectors, or for coordination between two sectors.

12. (Currently Amended) ~~A device according to one of the foregoing~~  
~~claims, characterized in that~~ The device according to claim 1, wherein said device moreover  
~~comprising further includes~~ means for displaying on the screen (12, 14) types of messages  
from the computer to the controller, on the form of icons (28) in biunivocal relationship with  
the concerned aircraft pairs, the said icons serving as virtual keyboard for addressing in  
return messages to the computer concerning the said conflict.

13. (Currently Amended) ~~A device according to one of the foregoing~~  
~~claims, characterized in that~~ The device according to claim 1, wherein said device moreover  
~~comprising further includes~~ means for displaying on screen (12) for each conflict of the  
~~Controller Agenda~~ controller agenda, a specific icon the designation of which by the  
controller makes displaying a virtual keyboard (31) specifically adapted to the situation.

14. (Currently Amended) ~~A device according to one of the foregoing claims, characterized in that~~ The device according to claim 1, wherein said device ~~moreover comprising further includes,~~ means for displaying on the screen (12) ~~or (14)~~ an icon the designation of which by the controllers or the assistant controllers, indicates their desire to know the solution(s) elaborated by the computer and then to inform the computer of the chosen solution.

15. (Currently Amended) ~~A~~ The device according to ~~claims 12 to 14~~ claim 12, characterized by the fact that said set of icons (28) will permit to the controller to delegate, when he or she designates them, the responsibility to the computer.

16. (Currently Amended) ~~A device according to one of the foregoing claims, characterized in that~~ The device according to claim 1, wherein said device ~~moreover comprising further includes~~ means for displaying on one of the controllers screen, close to the display of each problem, the time left before the actual conflict and/or the separation at the crossing of the trajectories.

17. (Currently Amended) ~~A device according to one of the foregoing claims, characterized in that~~ The device according to claim 1, wherein said device ~~moreover comprising further includes~~ means for displaying on one of the controller screens all the moments of occurrence of the conflicts still to be solved on a time graduated axis.

18. (Currently Amended) ~~A~~The device according to ~~one of the claim~~  
17, characterized in that the displaying means of the display of the occurrence moments are  
such that a controllers can add the moment when they estimate to have to check the state of  
each problem.

19. (Currently Amended) ~~A device according to one of the foregoing~~  
~~claims, characterized in that~~ The device according to claim 1, wherein said device moreover  
~~comprising~~ further includes means for elaborating on a screen (SC) a display making  
appearing each aircraft pair in potential conflict on the form of a point (P) and of its speed  
vector, the coordinates of the said point being respectively in abscises the delay between the  
present moment and the moment when the said aircraft will have a minimum longitudinal  
separation, and in ordinates their separation distance at this moment.

20. (Currently Amended) ~~A~~The device according to ~~one of~~  
~~claims~~claim 19, ~~characterized in that~~ wherein, said device moreover is arranged for  
associating to the point (P) representing an aircraft pair, a label (E) providing the necessary  
data concerning the said aircraft.

21. (Currently Amended) A-The device according to ~~one of the foregoing claims, characterized in that~~ claim 19, wherein said device moreover is arranged for associating to the point (P)-representing an aircraft pair a indicator (I)-giving their vertical separation when their horizontal separation will be minimum.

22. (Currently Amended) A-The device according to ~~one of the foregoing claims, characterized in that~~ claim 1, wherein said device moreover arranged laid out such as any designation by a controller of an aircraft on any of the screens makes appearing on all the other screens the said aircraft and the aircraft conflicting with it.

23. (Currently Amended) A-The device according to ~~one of the foregoing claims, characterized in that~~ claim 1, wherein said device moreover comprising further includes means to send control instructions to the on board computers (17)-of the so equipped aircraft, and means for receiving from the said computers data confirming the proper execution of the said instructions.

24. (Currently Amended) A-The device according to claim 23, ~~characterized in that~~ wherein said device moreover comprising further includes means for sending a message to the so equipped two conflicting aircraft for sub-delegating to them of the responsibility of insuring their safe separation by their own means.



25. (Currently Amended) ~~A~~The device according to ~~one of the foregoing claims and claim 15, characterized in that~~wherein said device ~~moreover comprising~~further includes means for insuring the automatic display of any so delegated conflict, so that the ~~Controller Agenda~~controller agenda provides to the controller a permanent monitoring board displaying a list of the delegated conflicts and a list of the conflicts still to be solved.

26. (Currently Amended) An automated process for evolutionary assistance to air traffic control performed in an air traffic control system comprising a computer programmed for:

- receiving data concerning aircraft flight plans ~~(3)~~ and Radars ~~(4)~~ and elaborating and displaying them ~~(5)~~ to controllers ~~(6)~~ of a control sector ~~(8)~~, the said controllers having a radiotelephony link ~~(9)~~ for communicating with the said aircraft ~~(10)~~, and;

- elaborating and displaying a list, ~~said the "Controller Agenda"~~ controller agenda ~~(12)~~, of the conflicts ~~(13)~~ such as the said controllers can forecast them with the sole data and analysis means they can have access to;

~~characterized in that the process comprises:~~

- an establishment and updating of a list computer agenda of conflicts ~~(19)~~ ~~said the "Computer Agenda"~~ on the basis of all the data and computing means available to the computer;

- a comparison, pair of aircraft by pair of aircraft, of the ~~Controller Agenda~~ controller agenda and the ~~Computer Agenda~~ computer agenda, such as to make appearing the forecast disparities between the two said ~~Agendas~~ agendas;

- a selection of those of the problems retain by the controllers which only results from the lack of accuracy of the forecast as made by the said controllers; and

- a selection among the retained problems of those which can be solved by a slight modification of the flights parameters.

27. (Currently Amended) A-~~The~~ process according to claim 26, ~~characterized in that~~ wherein said device ~~moreover comprising~~ further includes means for elaboration of optimal solutions to the conflicts of the ~~Computer Agenda~~ computer agenda.

28. (Currently Amended) A-~~The~~ process according to claim 27, ~~characterized in that~~ wherein said device ~~moreover comprising~~ further includes:

- a link between the ground and the aircraft computers for constituting, by an action being subliminal to the controllers and the pilots, an “automatic air traffic control pilot”;

- exchanges of messages between the computer and the controllers (6) having the screens (5) as a basis; and

- the elaboration and performing of conflict avoidance of the aircraft via the said data link (16) between the ground and aircraft airborne computers (17).